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COORDINATION IN ENERGY

Energy programme activities within and outside the United Nations system

Report of the Secretary-General

SUMMARY

The present report summarizes the main energy programme activities of entities within the United Nations system as well as selected intergovernmental and non-governmental organizations. It is based on the responses of many of the organizations contacted.

The organizations are active in all aspects of energy development and use, as shown by the wide range of activities covering research and development, technical and financial cooperation at the multilateral and bilateral levels; the establishment or strengthening of existing institutions; education and training; applications of new technologies; meetings, including seminars and workshops; and publications and database management. Many of the activities are ongoing, reflecting the mandates of these organizations. In addition, especially in more recent times, the thrust of activities have focused on environmental aspects of energy development and use, including energy conservation and efficiency of use; inter-fuel substitution; and promotion of the development and increased use of new and renewable sources of energy.

* E/C.13/1994/1 and Corr.1.

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INTRODUCTION

1. By resolution 46/235, the General Assembly decided to establish the Committee on New and Renewable Sources of Energy and on Energy for Development. The Committee would comprise 24 government-nominated experts, elected by the Economic and Social Council for a period of four years, and would meet once every two years. The Committee would retain the mandate of the Committee on the Development and Utilization of New and Renewable Sources of Energy, including the consideration of its relation to environment and development. It would also take over the mandate of the Committee on Natural Resources pertaining to energy, as defined in Economic and Social Council resolution 1535 (XLIX) of 27 July 1970. The Committee would furthermore address relevant issues contained in Agenda 21 pertaining to energy and related programmes and activities.

2. The present report summarizes current and planned programmes, projects and activities, both within and outside the United Nations, with a view to helping the Committee formulate its future programme of work in new and renewable sources of energy, as well as energy for development. Contact was made with the organs, organizations and bodies of the United Nations system and selected intergovernmental and non-governmental organizations to solicit relevant information that would form a basis for preparing this report. The report highlights the main points contained in the responses. 1/ The thrust of effort appears to be in energy conservation and efficiency of use; security of supply and inter-fuel substitution; environmental aspects of energy development and use; and promoting the development and more widespread use of new and renewable sources of energy.

3. It should be noted, however, that coverage of some important energy programmes and activities, such as those of the World Bank, is lacking since no submissions were received by the Secretariat. Furthermore, coverage is limited in some instances to new and renewable sources of energy, in part because of an apparent misunderstanding of the mandate of the Committee.

I. UNITED NATIONS SYSTEM

4. Entities within the United Nations system are undertaking a wide range of activities, many of them ongoing. A large number of programmes have been in technical cooperation with developing countries, including advisory services, training workshops and seminars, publications and database management. Activities on the promotion of the development and more widespread use of new and renewable sources of energy have been on the increase. Practically all of them, in one way or another, involve energy conservation and efficiency of use and issues relating to energy and the environment. Planned programmes also reflect this trend.

A. United Nations

1. Economic and Social Commission for Asia and the Pacific

5. The current work programme of the Economic and Social Commission for Asia and the Pacific (ESCAP) focuses on (a) increased energy intensity; (b) fuel substitution and fuel switching from fossil to non-fossil sources; and (c) adoption of clean fuel technologies. The principal activities comprise (a) improvement in management techniques, for example, sectoral demand studies and analyses of conservation potential, and optimum energy pricing; (b) conservation and efficient use of energy and promotion of energy efficient lifestyles; (c) fuel substitution and fuel switching, for example, from coal to oil and gas, or from oil to gas; (d) dissemination and promotion of new and renewable sources of energy technologies; (e) optimum utilization of electricity, including substitution of fossil fuels by hydraulic, geothermal, nuclear and solar energy, and shifting from non-electrical power (internal combustion) to electricity (electric motors); (f) studies on mitigation against acid rain; and (g) addressing such issues as air pollution in urban and industrial centres, and siting of large power plants or dams.

6. The following reports have been prepared for the Committee on Environment and Sustainable Development of ESCAP:

(a) Energy scene and trends, including integration of environment in energy policy and planning;

(b) Sectoral energy demand trends, the potential for inter-fuel substitution and energy conservation, and the status of demand management in Asia;

(c) Prospects for enhancing energy efficiency in the Asia/Pacific region;

(d) Operational efficiency improvements, including demand-side management of Asia and Pacific electric power utilities.

Recurrent publications include the following: (a) ESCAP Energy News; (b) Energy Resources Development Series; and (c) Electric Power in Asia and the Pacific, 1991 and 1992. Non-recurrent publications include: (a) Energy efficiency guidebook for the Asia/Pacific region; (b) New and renewable sources of energy supply and environmental management; (c) Environmental management for power systems; and (d) Roster of regional experts and institutions on conservation and efficient utilization of energy.

7. The above programme of ESCAP will be supplemented by the provision of advisory services to member countries on a variety of energy issues. In addition, ESCAP will execute a project financed by the United Nations Development Programme (UNDP), covering the period 1993-1997, entitled "Programme for Asian Cooperation on Energy and Environment", which will include energy and environment planning, coal development and utilization, natural gas and petroleum development, rural energy and environment planning, conservation and efficiency and electric power systems management. ESCAP also plans to implement the Asian component of the Energy Efficiency 2000 Project, a global project

proposed by the Economic Commission for Europe (ECE), to be implemented by all the regional commissions. An ad hoc group of experts is planned on energy resiliency and integration of environmental policy in energy development and management.

2. Economic Commission for Europe

8. The programmes of ECE in energy comprise four major areas of activity:
(a) fuel-related programmes and new and renewable sources of energy;
(b) interaction with other related areas such as the environment;
(c) decision-making in the field of energy involving working parties on coal (WPC), gas (WPG) and electric power (WPE) and the Committee on Energy; and
(d) the Energy Efficiency 2000 Project. Activities are carried out under numerous programme elements encompassing:

(a) Energy reforms in Central and Eastern Europe covering market adaptation of energy, transition of the coal industry to a market-oriented economy, implications of economic reforms on electric power supply/demand and cooperation of the gas industry and market in the ECE region;

(b) Rational use, efficiency and conservation of energy, encompassing the Energy Efficiency 2000 Project; energy efficiency standards, energy conservation, energy developments, policies and prospects in the region; rational use of coal, efficiency in the electric power subsector; and rational use of gas;

(c) Interface between energy and the environment, including the interface between energy and the environment - sustainable energy; economic instruments for sustainable energy development; sustainable coal development; environment protection in coal mining and utilization; environmental aspects of sustainable development in electric power; and the gas industry and the environment;

(d) Energy policies and prospects related to statistics and projections involving national energy programmes, policies and prospects; and an overview of energy-related activities;

(e) Energy demand and supply issues for sustainable development, comprising significant new developments affecting energy demand and supply in the short and medium terms; new and renewable sources of energy, developments in the coal industry; electric power developments, policies and statistics; and developments in the gas industry;

(f) Energy trade, trade facilitation and infrastructure, comprising energy trade in the region in a worldwide context; market trends and trade facilitation in the coal industry; gas trade and interconnections; and electricity interconnections. WPC has addressed two main issues: coal extraction technologies in open cast mining and clean coal utilization technologies. WPC is currently developing programmes for building up national and regional capacities for promoting an environmental impact assessment of coal production and use technologies. Assistance to economies in transition has been through several workshops and activities concerning the Energy Efficiency 2000 Project.

ECE has been cooperating actively in this area with other international and non-governmental organizations.

3. Economic Commission for Africa

9. The activities of the Economic Commission for Africa (ECA) have been guided by the need to strengthen institutions in the region and to generate awareness on the part of policy and decision makers about emerging energy problems and how they relate to other issues, including, in particular, environmental ones. To this end, ECA has cooperated with the United Nations and other regional and international organizations, for example in the elaboration of Global Energy Efficiency 21; with the African Development Bank in the organization of a seminar on energy policy and development; and with the World Bank in undertaking a strategic study on the rationalization of petroleum product supply.

10. Advisory services were rendered for the purpose of formulating integrated energy policies into overall socio-economic development strategies; maximizing efficiency of production, conversion, distribution and end-use of all forms of energy; and for a specific project on the possibility of interconnections of electrical grids in East Africa. Technical cooperation in institution-building involved the establishment of the African Regional Centre for Solar Energy in Burundi and the setting up of the Technical Advisory Committee on Nuclear Science. Training has been conducted for researchers, engineers and technicians in conventional as well as new and renewable sources of energy, through workshops and seminars. ECA has published a number of documents, including guidelines on petroleum legislation; potential contribution of new and renewable sources of energy; and energy supply, energy use and related policy options in African countries. The Commission organized training workshops on energy policy and the environment, in October and November 1993; an ad hoc expert group meeting on nuclear science and technology; and an ad hoc meeting of senior advisers on energy strategy and policies in Africa in May 1993.

11. Planned activities include (a) an ad hoc expert group meeting on policies and strategies for the development of natural resources and energy in Africa (1994); (b) the Sixth Regional Conference of Ministers responsible for the development and utilization of mineral resources and energy; (c) technical studies on, respectively, the viability of photovoltaic energy for rural electrification in Africa (1995) and economic viability of manufacturing turbines and generators for mini-hydropower in the region; (d) a study tour on new and renewable sources of energy; (e) advisory services to member States and to regional and subregional organizations; and (f) joint implementation of the international project on Global Energy Efficiency 21.

4. Economic and Social Commission for Western Asia

12. The Economic and Social Commission for Western Asia (ESCWA) has undertaken many activities relevant to new and renewable sources of energy, including studies and seminars. A large number of studies and technical projects have been prepared covering a wide range of subjects including energy conservation in the region, introduction of biogas to rural and remote areas; energy

conservation in the housing sector of the region; comparative study of solar and wind energy utilization; applications of solar and wind technologies in the region; generating energy from urban and rural wastes in selected countries in the region; strengthening of energy institutions in the least developed countries in the region; prospects for biogas energy utilization in the Syrian Arab Republic; a survey of low-grade fuels; issues of rural energy in the region; and survey and assessment of energy-related activities and development in the region. Seminars have covered small-scale solar and wind technologies; economic, social and environmental aspects of biogas technologies, design, construction, operation and maintenance of biogas production plants and implementation of demonstration projects; and biogas technology covering various technical, economic, social and environmental aspects. Planned activities include a regional training workshop to review the latest development in the region and to explore, as well as promote, their application in the region; and a training programme on construction and operation of biogas plants.

5. Economic Commission for Latin America and the Caribbean

13. The countries in the Economic Commission for Latin America and the Caribbean (ECLAC) region need timely and reliable information in order to formulate plans for the energy sector. The countries also need to access methodological and analytical instruments for their market studies and evaluation. In addition, owing to the shortage of resources, many national bodies in the region, concerned with planning in the energy sector, require advisory assistance and substantive support in these matters. The main objectives of the Commission, therefore, are to advise member States in the design and application of energy plans and policies and to support them in perspective studies of the energy sector. To this end, the activities of the Commission encompass research and preparation of studies on the interrelationship between energy, economic growth and development and the environment, and gathering and publishing statistics on the energy sector of the region.

6. Department for Policy Coordination and Sustainable Development

14. The Department for Policy Coordination and Sustainable Development is engaged in three subprogrammes concerning energy: (a) monitoring and analysis of global energy trends and prospects and their impact on development and environment; (b) promotion of sustainable energy exploration and development in developing countries; and (c) furthering the development and use of new and renewable sources of energy. The objectives of the first subprogramme are to assure a flow of universally accessible analysis of the current and projected balance between global energy supply and demand for addressing energy issues at the national and international levels; to strengthen the ability of national and international policy makers to anticipate global energy trends, so as to reduce uncertainties in the formulation of energy plans, programmes and policies; and to increase further the knowledge base and understanding regarding the environmental impact of various policy options and policies. These objectives will be achieved through a number of studies on the prospects for renewable

sources, complemented by profiles of analysis on conventional energy sources, as well as studies on energy efficiency and conservation, including demand-side management. The results of all these activities are made available to intergovernmental bodies and Governments through documents requested by intergovernmental bodies and technical reports for general distribution.

15. The objective of the second subprogramme is to foster the acceleration of energy exploration and development, particularly in energy-deficient developing countries. Research work will focus on identifying gaps between investment requirements and financial availability and bringing them to the attention of relevant intergovernmental bodies. Research and analytical studies will monitor factors influencing overall energy resource investments such as, inter alia, institutional structures, energy prices, developments in exploration techniques and changes in the provisions of long-term agreements between host countries and foreign investors. Particular attention will be given to the exploring and monitoring of the mobilization of new sources of financing for sustainable energy development projects and programmes.

16. The third subprogramme has the objective of facilitating the implementation of the Nairobi Programme of Action for the Development and Utilization of New and Renewable Sources of Energy and relevant areas of Agenda 21, mainly through the monitoring of worldwide progress and the strengthening of coordination efforts within the United Nations system as regards activities in new and renewable sources of energy. The primary activity under this subprogramme is the provision of substantive support to the Committee on New and Renewable Sources of Energy and on Energy for Development and the preparation of documentation for the Committee. The programme will take fully into account the need to ensure complementarity between the Committee and the Commission on Sustainable Development. During the first session of the Committee, to be held in February 1994, the programme of work under this subprogramme will be discussed and future activities planned.

7. Department for Economic and Social Information and Policy Analysis

17. The Department for Economic and Social Information and Policy Analysis has several activities in energy. The Statistical Division of the Department compiles energy information. The Division uses such sources as the United Nations Energy Questionnaire for the collection of national data; it collaborates with the Organisation for Economic Cooperation and Development (OECD) and ECE in the collection of OECD and non-OECD European data, and it also uses various other public sources. Updating, correcting and retrieval of data in the energy statistics database are managed by the United Nations Statistical Information System (UNSIS). The database currently includes data from all countries, former countries and historical groupings, and covers the period 1950-1991. The Division issues publications, with set tables, covering production, consumption and trade of solid, liquid and gaseous fuels as well as electricity, such as the Energy Statistics Yearbook (series J). It also publishes Energy Balances and Electricity Profiles (series W), giving overall energy balances and electricity profiles for more than 100 developing countries. Both these publications contain data on renewable energy sources as well as on

conventional energy. The Division also develops and improves concepts and methods of energy statistics and has issued three publications in this regard, namely, Concepts and Methods in Energy Statistics, with Special Reference to Energy Accounts and Balances (series F, No. 29), Energy Statistics-Definitions, Units of Measure and Conversion Factors (series F, No. 44) and Energy Statistics - A Manual for Developing Countries (series F, No. 56). With regard to new and renewable sources of energy, the Division has developed methodologies that allow the increasing coverage of new and renewable sources of energy statistics. The result of this effort can be found in the report of the Ad Hoc Expert Group on Methods for the Collection and Compilation of Statistics on New and Renewable Sources of Energy (ESA/STAT/AC.30/19). The Division provides technical assistance in the form of training, seminars, workshops and study tours to advance energy statistics in developing countries. It is envisaged that extensions of methodological and data collection work will take place in the following areas: energy price and cost statistics; statistics on energy-related infrastructure, such as pipelines, tanker fleets and transmission lines, and on energy and investments and exploration activities. Linking environmental statistics and indicators with energy statistics is also envisaged as a future activity of the Department.

18. The Macroeconomic and Social Policy Analysis Division is involved in analysing current and long-term energy developments and prospects and their impact on the world economy and development efforts. The Division has developed models of energy supply and demand projections, with a view to analysing various scenarios and their impact on the economies of various regions. It assists in the preparation of documents to intergovernmental bodies on these issues. Global energy trends, in particular international oil markets, are analysed in chapter V of the World Economic Survey, published annually. In the context of Project LINK, the Department monitors oil price developments and undertakes research on the impact of energy consumption on the environment.

8. Department for Development Support and Management Services

19. The energy programme of the Department for Development Support and Management Services focuses on operational activities, including advisory services, project formulation and implementation, organization of meetings, symposia and workshops and publications. The Department fielded technical advisory services to 60 developing countries, and is currently executing 115 energy projects in 40 developing countries, with a total budget of $110 million. It assisted a number of countries in the development of their indigenous oil and gas potential, an example is the $1.4 million project in China, and in oil and gas legislation and agreements, as well as in the preparation and evaluation of competitive bidding for licenses. It is also assisting several countries in the safe and more environmentally conscious development of their coal resources, for example the $10 million Global Environment Facility (GEF) project in China for the recovery of methane from coal formations, and clean coal technologies. The Department is implementing a large-scale programme on power plant modernization, rehabilitation, operation and maintenance, aimed at increasing the efficiency of systems for generation, transmission and distribution of electric power, and has sponsored interregional seminars in the Russian Federation, Sweden, Jordan and Finland in support of the

programme. It has also been providing assistance to Governments to establish and/or strengthen their capabilities in national energy planning and energy data and information processing.

20. To underscore its concern about negative environmental impacts, the Department's programmes include promotion of renewable energy applications, especially to rural communities, substitution of clean fuels, reduction of power sector losses and implementation of energy end-use efficiency measures. The Department has played a pioneering role in the development of geothermal energy, and provides expertise for basic geoscientific surveys, in exploratory drilling and in reservoir engineering and management. It has concluded a survey of geothermal resource potential in the eastern Caribbean and a prefeasibility study for the installation of a submarine cable for power transmission between the islands. It is involved in a $7 million project in Zimbabwe, funded through GEF, which is intended to provide a model for other countries with sufficient solar energy.

21. The Department maintains an ongoing programme of research in support of technical cooperation. Its publications in 1993 include Power Generation Options, Energy Efficiency in Transportation and Trends in Environmental Impact Assessment of Energy Projects. In 1992, the Department began the preparation of upstream studies of technical cooperation requirements at the national and subregional levels for UNDP under the TSS-1 programme. Seven studies have so far been completed, in China, the Islamic Republic of Iran, Peru, the Pacific subregion and the South Asia subregion. An expanded programme of studies has been approved for 1994-1995. The Department produces the Energy newsletter; The Natural Resources Forum, a quarterly journal (to be discontinued in 1994); a book series and technical publications, all of which focus on natural resources and energy-related development issues.

22. The Department has organized several meetings, workshops and symposia, in which representatives of developing countries have participated actively. The Department sponsored a number of meetings during 1992-1993, including the following: Conference on the Clean and Efficient Use of Coal and Lignite, Hong Kong; Seminar on System Planning in the Power Sector, New York; Symposium on Safety and Mechanization in Underground Coal Mining, Omuta City, Japan; Symposium on Coal Preparation and Beneficiation, China; Workshop on Economic Restructuring and Environmental Management in the Coal Sector, Prague; Workshop on Reinjection of Geothermal Fluids in Volcanic Environments, Costa Rica; Training in Small-scale Hydropower, China; Coal-bed Methane Recovery Workshop, Poland; and Castel Gandolfo II Colloquium on Renewable Energy for Environment and Development: Post UNCED Capacity-building in Developing Countries, Italy. The Department organized international seminars in Beijing and Stockholm on policies, programmes and priorities for dealing with energy, environment and sustainable development.

9. United Nations Development Programme

23. The United Nations Development Programme is currently formulating an overall strategy on energy and the environment as part of its continuing activities in this field. UNDP views energy as a key factor in economic development, and energy activities will continue to play a major role in its technical cooperation programmes. Current projects cover a variety of areas, including the following: national energy sector reviews, energy conservation, petroleum exploration, coal mining, wood fuels, hydropower and new and renewable sources of energy. These projects are executed either by other United Nations entities or by the Office of Programme Services of UNDP or through national execution. There have been improvements in the coordination of these projects since a programme approach was adopted, meaning that an energy umbrella programme contains a few smaller projects in different energy areas, also taking into account other donor projects.

24. There are currently 122 ongoing projects under UNDP IPF funding. This represents some $104 million in UNDP funding and $46 million in cost-sharing from other sources, usually national funding. UNDP GEF energy projects total some $86 million and range from installation of renewable energy systems to monitoring of greenhouse gases; they cover, in particular, Africa, Asia and the Pacific and Latin America and the Caribbean.

25. In future, UNDP will focus on such areas as strengthening of government capabilities to monitor projects undertaken by the private sector in the energy field, including negotiation and energy-management techniques. It will continue to give assistance in the preparation of national energy sector reviews, but will focus more on projects where expensive turnkey projects can be avoided, owing to locally developed skills through the transfer of new technologies, projects that prevent or limit negative environmental impacts, and projects promoting renewable energy that alleviate poverty by raising living standards in rural areas through the provision of cheap cooking fuel, light and heat.

10. United Nations University

26. The United Nations University (UNU) has been working in cooperation with the United Nations on the feasibility of creating a network of centres of excellence in new and renewable sources of energy. The primary purpose of this project is to establish a network capable of leading research and training in new and renewable sources of energy, with each centre serving as a focus of subnetworks that would, in turn, link together new and renewable sources of energy institutions at the national and regional levels. A report on the subject was submitted to the Committee on the Development and Utilization of New and Renewable Sources of Energy at its sixth session and to the United Nations Conference on Environment and Development. Further funds have been made available by the Government of Italy for a financial study and to initiate fund-raising activities and begin procedures for establishing an initial network comprising a few pilot centres. UNU is currently collaborating with the Department for Development Support and Management Services and recently convened a colloquium at Castel Gandolfo to examine ways in which the proposed network can be designed to achieve some of the goals of Agenda 21.

27. UNU continues to support the publication of ASSET, which was originally conceived to relieve, in particular, the intellectual isolation of experts on new and renewable sources of energy, especially those from developing countries. UNU training programmes in energy include (a) a course on geothermal energy science and engineering at the National Energy Authority in Iceland (since 1979) and (b) a one-year course on renewable systems at the India Institute of Technology in New Delhi (1993). It plans to continue the above courses and to survey possibilities for regional and travelling seminars, in conjunction with other institutions, in similar courses and in the development of course work in energy and the environment by selected groups or individual institutions.

B. Specialized agencies and other international organizations

1. World Health Organization

28. The activities of the World Health Organization (WHO) relating to energy include (a) use of new and renewable sources of energy for health and (b) assessment and control of environmental pollution from all sources, including energy. Activities under the first category include (a) participation in international conferences, including preparation of reports on solar pumping, lighting, cooking, sterilization and opportunities for photovoltaic technologies in the health sector; and (b) providing assistance to countries in such areas as information flows; evaluation of programmes in solar energy and drafting national policies in these areas; and research and development activities on the feasibility of an integrated approach to implementing the use of new and renewable sources of energy in rural areas, with primary emphasis on meeting health-care needs.

29. The main focus in the second category of activities is prevention of environmental pollution, including the preparation of guidance and reference materials for conducting training programmes covering indoor air pollution from biomass fuel, assessment of air, water and land pollution and motor vehicle air pollution. It also includes the preparation of training materials to provide participants with the fundamentals of integrated environmental management at both the industrial sector and national levels; a case in point is the training workshop in environmental control technology.

30. WHO is cooperating with other United Nations bodies in a number of areas; for example, the inter-agency project on risk management of large industrial complexes and energy production systems (with the International Atomic Energy Agency (IAEA), the United Nations Environment Programme (UNEP) and the United Nations Industrial Development Organization (UNIDO)). The purpose of this programme is to foster awareness of the need for more fully integrated approaches to the assessment and management of risks and environmental safety. Planned activities include the preparation of technical reference material (jointly with the World Bank) on managing urban motor vehicle air pollution; refining strategies, identifying priority countries and regions and preparing national and regional plans of action for introducing a range of proved new and renewable technologies; and a training workshop on the assessment of sources of air, water and land pollution.

2. United Nations Industrial Development Organization

31. Energy is one of the priority areas of the UNIDO medium-term plan and includes support of the energy-related aspects of industrial development; assistance in the planning of industry-related energy policies; focus on sustainable energy development and use of energy-conservation measures; and development of industry for energy and developing capabilities for local manufacturing of energy-related capital equipment. UNIDO provided assistance to developing countries to acquire and apply efficient and clean technologies suited to their development process. This included elaboration of energy-demand surveys; advice on the elaboration and introduction of a coherent energy-pricing policy; development and strengthening of government institutions; establishment of databases; assistance in know-how and technology transfer; identification of training requirements and preparation of training materials; and assistance in securing, where possible, the required financing. UNIDO implemented a large number of energy projects in 1992 amounting to $148.2 million: $46.5 million in Africa; $15.7 million in the Arab States; $38.7 million in Asia and the Pacific; $5.3 million in Europe; $11.5 million in Latin America and the Caribbean; and $30.5 million for global and regional projects. The projects included workshops on technical assistance in petroleum refining (Ecuador, Cuba and the countries belonging to the Southern African Development Council). UNIDO is providing technical assistance in energy conservation in the following areas: auditing at the plant level; development of appropriate software; formulation of corrective measures; and technical training. It has also provided technical assistance to improve efficiency, cost-effectiveness and acceptability of using low-grade coal. It has been involved in promoting the transfer of modern technologies for gasification, fluidized bed combustion and direct liquefaction, with a view to minimizing adverse environmental impacts.

32. UNIDO organized a conference on ecologically sustainable industrial development at Copenhagen in 1991, which identified the need to reduce pollution intensity as the most effective means of making industrial development compatible with concern for the environment. The Organization is cooperating in energy-related matters with other Vienna-based intergovernmental organizations, namely, IAEA, the Organization of the Petroleum Exporting Countries (OPEC) and the International Institute for Applied Systems Analysis (IIASA). It is also cooperating in the follow-up to the Senior Expert Symposium on Electricity and the Environment, held at Helsinki in 1991. A joint inter-agency project, entitled "Databases and Methodologies for Comparative Assessment of Different Energy Sources for Electricity Generation (DECADES)", is being implemented; the project relates to the assessment of various options for electricity generation, bearing in mind their technical programmes, economic competitiveness and health, as well as environmental impact. UNIDO plans to establish an Energy Unit. The Unit will place special emphasis on energy efficiency and conservation through technology and process adjustment, equipment maintenance and transfer of technology. The Unit will also be responsible for inter-agency cooperation.

3. World Meteorological Organization

33. The activities of the World Meterological Organization (WMO) in energy during the period 1992-2001 comprise (a) further evaluation of weather and climate implications in energy matters; (b) assessment of the effects of climate and climate change on the energy sector; and (c) facilitating practical applications of meteorological and hydrological information and related methodologies in various areas of energy conservation, production and distribution. To this end, it is supporting the work of the Intergovernmental Negotiating Committee for a Framework Convention on Climate Change. As part of the preparation for the United Nations Conference on Environment and Development, WMO co-organized the Senior Expert Symposium on Electricity and the Environment and is actively participating in DECADES. The Organization continues to assume an important scientific role on matters associated with the atmosphere's water in so far as this relates to energy and the environment, as well as to new and renewable sources of energy. It is involved in a large number of activities, including special programmes and projects with direct or indirect relevance to the development of new and renewable sources of energy, such as resource assessment, production, distribution and consumption. With increasing environmental concern, WMO is providing services in such areas as environmental impact assessment. WMO successfully concluded a workshop at Budapest in 1992 on a regional project on meteorological information for the development of renewable energy. The project covered most of the countries with transitional economies. It provided expert advice and some software. An important result of the project is the development and testing of systems for implementing energy meteorology within national meteorological services.

4. International Atomic Energy Agency

34. The International Atomic Energy Agency has a comprehensive programme covering electricity production by nuclear energy, nuclear safety and radioactive waste management. It is also cooperating with other United Nations organizations in the cooperative assessment of nuclear and other energy sources for the production of electricity. The Agency has developed an integrated package approach to energy, electricity and nuclear power programme planning, and is sharing the results of this effort with other organizations, for example the World Bank, the Asian Development Bank and the Inter-American Development Bank. Furthermore, the Agency provides basic information, guidance and technical assistance in planning the introduction of nuclear power. It has prepared a document on good practices in nuclear power plant construction. IAEA maintains a database on power reaction information systems (PRIS), which provides world-wide coverage of operating experience. It also systematically monitors nuclear plan performance indicators. It has prepared a study on the technical and economic viability of using nuclear energy to produce fresh water by the desalination of sea water, and technical assistance has been provided to several African countries on feasibility studies to this end. Other relevant publications include mineral resource assessment and environment studies; uranium deposit development and production. Safety standards are of particular interest. IAEA recently published a guide on nuclear safety that addresses concerns about safety levels of nuclear power plants built to earlier standards. The Agency has also produced a study on nuclear safety analysis.

35. The Agency is involved in the Waste Management Assessment and Technical Review Programme, which assists Member States with nuclear power plants and fuel cycle activities in their evaluation of technical operational safety and performance features of radioactive waste management systems - planned or in operation. As part of a continuing effort to raise the general level of nuclear safety worldwide, the Agency has undertaken a series of activities to identify the major safety issues associated with various types of reactors used in Eastern Europe and the former Soviet Union. A nuclear energy convention is expected to be finalized by the end of 1994. The Agency provides advisory services for maintaining high standards of nuclear safety. IAEA has an ongoing programme on comparative assessment of nuclear power and other energy systems for electricity generation. In 1991, it organized, jointly with other international organizations, a Senior Expert Symposium on Electricity and the Environment. As a follow-up, the Agency initiated the creation of DECADES, as referred to above. Meanwhile, IAEA is participating in the preparation of the second assessment report of the Intergovernmental Panel on Climate Change.

5. United Nations Education, Scientific and Cultural Organization

36. The energy programme of the United Nations Educational, Scientific and Cultural Organization (UNESCO) focuses on two aspects, namely, the development of training and information services in renewable energy and energy conservation and the establishment of an international forum to review and evaluate the impact of energy use. It has an on-line referral energy database, which has recently been expanded to include training institutes and network experts and, in the future, will include manufacturers and producers of new and renewable sources of energy technologies. UNESCO also sponsors networks on new and renewable sources of energy and energy conservation in Asia and the Pacific, in Latin America and the Caribbean, and in Africa.

37. A major initiative of UNESCO was the launching of the World Solar Summit Process (WSSP) in 1992; in this context, solar refers to all forms of renewable energy. The continuation of this programme has been approved for the next biennium. WSSP was launched as a response to the need to create a harmonized coherent world effort in research, development and marketing of renewable sources of energy and their technologies. WSSP was organized in close partnership with the United Nations Secretariat, the specialized agencies and concerned governmental and non-governmental organizations and, as an ongoing operation, will evolve through five interdependent phases. The first phase has already been completed with the convening of the High-level Experts Meeting at the Solar Summit held in Paris from 5 to 9 July 1993. At that meeting, experts from many countries gave in-depth consideration to the assessment of critical solar energy and related fields. The meeting discussed and approved the conclusions and recommendations of the High-level Expert Meeting for the World Solar Summit and the Resolution Addressed to the Founding Sponsors of the World Solar Summit Process, together with more specific recommendations on other topics, which identified strategic projects to be undertaken. In this first phase a worldwide network of renowned experts was created embracing practically all existing national, regional and international authorities in this field, and including existing networks such as the International Solar Energy Society and the World Energy Council.

38. Phase two will be a form of referendum on the future of solar energy developments, based on the outcome of phase one and on the reflection and comments of relevant national ministries and other competent governmental and non-governmental organizations. National and regional meetings along the lines of the Summit will be encouraged to promote popular support. High-level expert meetings will be organized at the national and regional levels as well. Phase three will consist of a major congress in 1995, at which the documents produced during phase two will be debated. The programme of action for the world solar decade will be drawn up, setting out well-defined objectives and activities at the international, regional and national levels. The programme of action will then be submitted to relevant governmental and intergovernmental institutions, among them the General Assembly. Phase four will be a summit of heads of State in 1995, focusing attention at the highest level on the programme of action for the world solar decade. Phase five will be the launching of the world solar decade, 1995-2005, and the adoption of the programme of action. The decade will be one of intense global activity designed to foster research, development, commercialization and rational use of renewable energy and technologies based on the programme of action. These activities will involve Governments, intergovernmental agencies and institutions, non-governmental organizations, professional associations, industries and concerned individuals.

39. Phase one has already identified several large-scale projects that could encourage greater use of renewable energy. These include solar energy for rural development; public information and education; solar energy for the development of Africa; solar energy for peace; world solar fund; and an international solar treaty. These proposed projects will go through a selection process during the second phase. In phase three, a draft of the proposed international solar treaty will be presented at the congress in 1995, where it is expected that it will be accepted as part of the programme of action for the world solar decade.

6. Food and Agriculture Organization of the United Nations

40. The energy programmes of the Food and Agriculture Organization of the United Nations (FAO) cover assessment and planning; wood, solar, wind and bio-energy; rural mechanization; small hydropower systems; draught animal technology; and integration of energy sources. FAO activities in energy assessment and planning focus on developing an integrated approach that incorporates energy into rural and agricultural planning, with a view to providing assistance to countries in establishing a framework of activities in this field. FAO has also been promoting the development and application of mature and promising energy technologies. The development and adoption of an integrated approach to energy assessment and planning has resulted from consultations with experts at the national and regional levels, and will be implemented, in various degrees, in different regions. For example, a Latin American Working Group on Energy Planning for Sustainable Rural Development has been established. FAO has been cooperating with ECLAC, the Inter-American Development Bank and the Latin American Energy Organization in formulating projects in this area. It has also initiated collaboration with the African Development Bank (in the African Energy Programme), ESCWA and ECA.

41. FAO activities in its wood energy programmes include the production of charcoal and wood-based commercial energy for industrial and rural community needs. Studies have been carried out on the flow of wood fuels in Costa Rica, the Dominican Republic and the Philippines, and case-studies for wood-fuel electricity generation are being prepared for Argentina and Peru. Wood energy is one of the five areas of priority of the Tropical Forest Action Plan, launched in 1985 to address the most urgent aspects of tropical deforestation. The bio-energy programme relates to agriculture, forestry and energy and social as well as cultural issues and covers land-use planning, employment generation, and environmental, technological and economic considerations. Among the technologies of interest are anaerobic digestion of organic waste and residues, organic recycling and gasification of wood and agricultural residues. FAO has evolved a multidisciplinary approach to address these multifaceted issues.

42. Solar energy technology applications of interest include drying of grains, other food crops and fish, solar cooking, water heating, greenhouses, water pumping, communications, lighting and refrigeration. FAO has been promoting their application and assessing their appropriateness for rural areas. Wind energy is used for water pumping and lifting, milling and provision of auxiliary power to fishing vessels. Part of the work of FAO involves improving knowledge of wind-energy potential, and monitoring and analysing wind-power generating systems for decentralized rural electrification schemes. FAO is also monitoring developments in small- and medium-scale hydropower plants in developing countries.

43. Energy input is implicitly treated in many FAO field projects which involve the introduction of machinery, tools and alternative technologies to rural areas in relation to various farming systems and agro-industrial activities. FAO is also concerned with draught animal equipment components and with the improvement of animal systems for food production, pumping, grinding etc.

44. Of particular interest to FAO is the integration and use of various energy sources to meet appropriate energy requirements. Activities in this area comprise a field project that integrates alcohol production from sorghum with biogas, pyrolysis, solar and wind systems, energy conservation, and other energy sources to meet specific farm activities.

45. FAO is sponsoring regional meetings in wood energy in Latin America and Asia. It was involved in an International Workshop on Grain Drying, held in Brazil in October 1993, during which the latest solar drying technologies were discussed. FAO also organized an International Expert Meeting on Biofuels for Development in Rome in September 1993 to assess the latest thinking and programmes in biofuels and to formulate recommendations on the main issues guiding biofuel development and use.

II. INTERGOVERNMENTAL ORGANIZATIONS

A. Commonwealth secretariat

46. The Commonwealth secretariat is currently embarking on the implementation of a major programme in new and renewable sources of energy that will initially encompass solar and biomass energy. The programme will promote the use of photovoltaic energy for electricity supply in rural areas and will incorporate training in the installation and maintenance of equipment; in the long run, it is intended to promote commercial possibilities through transfer of technology, significant private sector involvement and implementing government policies. The focus in biomass will be on the production of biogas from waste and on the development of concrete, well-defined programmes for promoting and utilizing biogas through the development of national skills for the design, construction, management and maintenance of the digester; development of national policies that enable access to financial resources for investment into this area; and generation of awareness of the validity of biogas technology from both energy and environmental perspectives.

B. Organization of the Petroleum Exporting Countries

47. The main objectives of the Organization of the Petroleum Exporting Countries are to coordinate and unify the petroleum policies of member countries; to ensure the stabilization of prices in the international oil market; to ensure an efficient, economic and regular supply of petroleum products to consuming nations; and to ensure a fair rate on their capital to those investing in the petroleum industry. The main activities are focused on studies on the economic development of various regions of the world; relevant energy issues such as energy demand and supply for different regions of the world, up to the year 2020, using an in-house integrated energy model (OPEC World Energy Model); impact of environmental policies on global economies and on energy demand; impact of existing energy taxes and proposed energy/carbon taxes on the OECD countries and, in particular, the OPEC member countries; analyses of the effect of the current situation of the economies in transition on the world energy outlook; and impact on technology of oil and energy demand vis-à-vis conservation, substitution etc. OPEC has also been continuously monitoring the world energy market and evaluating policies and measures that can affect the welfare of OPEC member countries.

C. International Energy Agency

48. The objectives of the International Energy Agency (IEA) are (a) to improve the world energy supply and demand structure by developing alternative energy sources and improving the efficiency of energy use; (b) to maintain and improve systems for coping with oil supply disruptions; (c) to operate a permanent information system on the international oil market and other sources of energy; (d) to assist the integration of environmental and energy policies; and (e) to approach energy developments in a global context through cooperative relations with non-member countries and international organizations. IEA is assisted by standing groups and special committees, which draw on energy specialists from

member countries. These comprise, respectively, standing groups on (a) long-term cooperation, which develops policy analyses to promote the efficient use of energy; (b) energy questions, which refines, tests and maintains on a stand-by basis the IEA emergency oil-sharing systems; and (c) oil markets, which collects and analyses information on the international oil market. The committees are: (a) Committee on Energy Research and Technology, which encourages international cooperation in energy technology and (b) Committee on Non-Member Countries, which closely monitors energy developments in their global context.

49. IEA encourages its members to increase their energy security through diversification of their energy sources - through annual reviews of individual member country's policies. Every three years, the policies are reviewed in depth. The Industry Advisory Board advises the Standing Group on Emergency Questions on energy, oil sharing and relevant questions. IEA has also developed additional measures to respond to oil supply disruptions; these would include early and coordinated use of stocks; measures to reduce oil consumption; short-term fuel switching; increased indigenous consumption; and discouraging unusually large spot market purchases. The Standing Group on Oil Markets collects information on world oil production, stock levels and changes, worldwide stocks at sea, oil imports and exports, consumption and refinery operations.

50. The Committee on Energy Research Technology achieves its objectives through enhanced cooperation on energy research and development, as well as application of new and efficient energy technologies. To this end, it carries out annual reviews of national energy technology policies and research and development programmes to assess their relevance to energy security goals, and sponsors state-of-the-art reviews and conferences on promoting energy technologies. The Committee on Non-Member Countries studies energy-related developments in energy-producing and consuming countries throughout the world and examines the global context for IEA energy policy decisions. IEA has made a major commitment in Central and Eastern Europe and the former Soviet Union. It is also actively involved in multilateral activities such as the negotiations on the European Energy Charter and the Conference on Coordination of Assistance to the Newly Independent States. In the Asia-Pacific and Latin American regions, the Agency's recent focus has been on developing cooperative relations with a number of countries.

51. IEA publishes many documents relating to its activities. These include: Energy Policies of IEA Countries; Oil Market Report; Energy Balances of OECD Countries; Energy Prices and Taxes; Energy Statistics of OECD Countries and Energy Studies of Non-OECD Countries. It also publishes Coal Information, Oil and Gas Information and Electricity Information. Furthermore, IEA has published a series of studies on energy and the environment, such as Energy and the Environment: Policy Overview (1990); Greenhouse Gas Emissions: The Energy Dimension; Energy Efficiency and the Environment and Climate Change Policy Initiatives.

D. Latin American Energy Organization

52. Since its creation in 1973, activities of the Latin American Energy Organization (OLADE) have included training, research and development and promotion of new and renewable sources of energy. Emphasis has been on training in energy technologies and applications through seminars and workshops. Specific activities have related to geothermal energy, small-scale hydropower, biomass and solar and wind energy. Methodologies have been developed for conducting studies in the various stages of a geothermal project. A current joint project, with the Inter-American Development Bank, is completing work on new guidelines on reconnaissance, evaluation, development and use of geothermal energy. Work has also gone into the development of different turbines for small-scale hydropower applications. In biomass, special attention has been given to the development of national programmes and to the transfer of proved technologies; a number of countries have received assistance in the promotion and dissemination of improved cookstoves. While activities in wind energy have focused on the preparation of technical documents for use in training workshops, a preliminary wind atlas in the region has been completed and published. In solar energy, too, the bulk of the work has been in preparing technical documents and a solar climatology atlas. A workshop on photovoltaic systems for rural electrification, funded by UNDP and the Amazon Cooperation Treaty, was held at Quito in 1993. OLADE plans to prepare new guides in geothermal energy and to implement a project in small-scale hydropower and electrification involving solar and wind energy and small-scale hydropower plants. A workshop on photovoltaic systems for rural electrification is planned for March 1994.

E. Economic Community of West African States

53. Since 1982, the Economic Community of West African States (ECOWAS), based in Lagos, has been promoting the development and utilization of new and renewable sources of energy. It has formulated a set of projects and programmes, some of which are being implemented. A programme on energy economics involves energy audits and training of technicians, the first beneficiaries being Sierra Leone and the Niger. The Community has also established a network of national entities charged with the collection and dissemination of information on renewable energy, which meets annually. The Community has formulated a set of terms of reference for a study on the needs of its member States as regards renewable energy equipment. The Community is currently looking for funding, amounting to a total of US$ 517,354, for the setting up of an information system, involving training of personnel in various national entities; information equipment for data storage and management, and documentation. In order to expand the energy audit programme to three more countries in the Community, an additional US$ 332,492 is needed. Under the evaluation programme of member States' needs, some US$ 40,000 is required to develop a solar map of the region, which would make it possible to assess equipment dimensions and their costs.

F. International Organization for Standardization

54. The International Organization for Standardization (ISO) has three technical activities related to energy: ISO/TC 180, solar energy, set up in 1980; ISO/TC 197, hydrogen energy technologies, created in 1990; and ISO/TC 203, technical energy systems, formed in 1991. The first committee works on standardization in the field of solar energy utilization in space and water heating, cooling, industrial process heating and air-conditioning. It consists of two working groups and three subcommittees concentrating on climate measurement and data, thermal system performance, reliability and durability, and collectors and other components. The committee has published six international standards, and two technical reports. The committee on hydrogen energy technologies was formed with a view to establishing standards for hydrogen distribution chains, storage infrastructures and fuelling facilities, interfaces, safety requirements, product specifications, test procedures and measurement systems simultaneously with industrial development and in advance of market introduction in order to avoid expensive readaptation later on. The committee comprises two working groups, one on liquid hydrogen fuelling systems and tanks for surface vehicles and the other on liquid hydrogen tank containers for combined transportation and ship carriers.

55. Because of an increasing demand for standardized methods for comparing different energy sources, the committee on technical energy systems was created in 1991. Economic comparison between different energy options are not always possible because future prices of fuel and equipment are not known. Comparisons based on analyses in energy terms might often be the only way. Common and globally accepted basic concepts and definitions are desirable to describe energy systems so as to be able to compare different sectors of the industry, as well as to establish methods of arriving at criteria for comparisons. There is also a growing demand for standardized information, so-called energy declarations, for products and processes, which the committee will address. The committee will standardize basic concepts and methods used to define, describe, analyse and compare technical energy systems and energy-ware balances, involving three working groups.

G. Centre on Integrated Rural Development for Asia and the Pacific

56. The main objectives of the Centre on Integrated Rural Development for Asia and the Pacific (CIRDAP) are to assist national action; promote regional cooperation; and act as a servicing institution for promoting integrated rural development. Current projects concern research and training. Research projects include the impact of technology transfer, including energy, on the rural poor; integrated crop, livestock and fish farming assistance (energy being an important input into this exercise). CIRDAP undertook a regional training course on the integration of environmental concern in agriculture and rural development projects, in which energy and associated issues were addressed. Further activities in research include solar energy as a source of energy for rural areas; and measures to improve housing for the rural poor, with special focus on the efficient use of energy for cooking, heating etc. Additional

training programmes will essentially be a condition of the above training group, focusing on planning and management of natural resources.

H. Regional development banks

1. Inter-American Development Bank

57. The Inter-American Development Bank has long recognized the key role that energy plays in social and economic development and has supported countries in the region in the development of their energy resources. The Bank is active in supporting programmes in the field of energy, covering such areas as the construction of hydroelectric plants, oil and gas pipelines, electric power transmission systems, urban and rural electrification, and other projects for increasing the region's energy supply. It emphasizes the need to expand energy supplies in rural areas in order to increase productivity in these areas. Since 1981, the Bank has been involved in projects in the field of new and renewable sources of energy covering geothermal, wind, solar and biomass energy. It has provided financing for strengthening or building institutions in the region and for the transfer and adaptation of renewable energy technologies. The Bank has also provided financial support for research and development of new energy systems and has fostered regional and international cooperation through information exchange and research and development efforts.

58. In geothermal energy, it has funded projects in Costa Rica, El Salvador and Nicaragua, as well as regional technical cooperation projects and programmes. These have included commissioning of power plants, exploratory drilling, feasibility studies etc. In wind energy, IDB activities have involved feasibility studies for wind power projects in Costa Rica. IDB is also financing a photovoltaic demonstration project and is currently participating in a technical cooperation programme involving studies and designs for national solar water heater programmes in the Caribbean. It has also funded a feasibility study on co-generation power plants using bagasse in Guyana and is currently involved in an evaluation project of co-generation potential in Colombia. IDB has been active in the Financing Energy Services for Small-scale Energy Users (FINESS), which is a cooperative programme with other multinational organizations, as well as such major entities as the United States Department of Energy.

2. African Development Bank

59. The African Development Bank (AfDB), in general, encourages the utilization of new and renewable sources of energy in Africa. To this end, it continues to assist member States in undertaking studies and in the implementation of development projects in the energy sector and the electricity subsector. The Bank has co-financed a number of studies and projects in electricity in the various subregions of the continent. Other projects include new and renewable sources of energy development and energy conservation (Egypt); a study on integrated investment for the production and transmission of electricity in the Gambia, Guinea, Guinea-Bissau and Senegal; electricity interconnection (Côte d'Ivoire/Mali; Benin/Nigeria); hydropower development (Ethiopia, the

Sudan); and thermal power (Ghana, Egypt). The Bank actively promotes regional integration on issues relating to energy. Furthermore, the Bank is assisting member countries in their efforts to accelerate the penetration of electricity to rural areas (Egypt, the Gambia and Tunisia). It will continue its involvement in similar projects, namely, energy conservation, new and renewable sources of energy, hydropower development and regional integration.

60. The Bank has recently produced a sectoral energy policy document, the objectives of which are (a) to provide aid for the Bank group in internal decision-making and a policy framework within which examination and assessment of energy sector programmes and projects submitted for investment by member countries can be made; (b) to provide information for member countries, and stimulate dialogue between them and the Bank group and among themselves concerning the types of energy projects in which the Bank group may become involved; and (c) to assist in coordinating activities in the energy sector with the activities of other funding agencies operating in Africa. The policy document will guide the Bank in its future intervention in the energy sector. There are plans to prepare an energy sector projects manual aimed at providing guidelines to Bank staff on how to implement energy policy through several stages, including pre-identification, identification, preparation, appraisal, supervision and post-project evaluation of specific energy projects and programmes in member countries. The Bank has also launched the African Energy Programme, a multinational project in which the Bank is cooperating with the International Labour Organisation (ILO), FAO, UNDP and UNESCO. The main objective of the Programme is to carry out an in-depth analysis of the African energy situation with a view to defining a regional energy sector development strategy as well as an optimal development programme for the sector.

3. Asian Development Bank

61. The thrust of the energy sector activities of the Asian Development Bank will be the promotion of fuel diversification and oil substitution by indigenous and renewable energy sources. Major areas of concern in the 1990s will include energy and the environment, resource mobilization and regional cooperation. As to energy and the environment, the Bank will promote a more systematic and detailed effort to integrate environmental considerations in planning, development and use of energy. It will also pay special attention to the use of clean coal technologies and measures to integrate transborder concerns such as acid rain. The Bank will actively promote increasing attention to energy conservation, in general, and to demand-wise management, in particular, in the electricity sector. The Bank will also examine its possible role in promoting decentralized rural energy systems based on new and renewable sources of energy. Rural energy planning and development will be emphasized as a means of improving rural ecology. At the same time, the utilization of natural gas will be promoted. The Bank will also promote the increasing participation of the private sector in owning and operating energy systems through such options as build-operate-transfer (BOT). Government-owned energy entities will be induced to rely less on State resources. Finally, the Bank will seek to promote regional cooperation and development in energy by integrating power systems across national borders, formulating regional gas pipeline grids, and developing large energy projects of regional economic relevance.

4. European Investment Bank

62. The activities of the European Investment Bank (EIB) are intended, inter alia, to promote (a) the economic development of the Community's less-favoured regions; (b) the attainment of the Community's energy policy objectives such as the rational use of energy, import diversification away from oil, and development of indigenous resources; (c) the modernization or conversion of enterprises, development or introduction of advanced technology to improve the competitiveness of Community industry, fostering of cooperation between enterprises in different member countries; and (d) the improvement of communications between member States (i.e., transport and telecommunications) or other Community objectives, such as protection of the environment.

63. EIB energy sectoral lending supports the Economic Community's energy policy objectives such as the rational use of energy, import diversification away from oil, and development of indigenous resources. In 1992, Bank lending in this area totalled ECU 3,132 million, a definite rise from ECU 2,743 million the previous year. The increased investment of EIB for the rational use of energy is beginning to have noticeable impact on the energy picture. Its lending in renewable sources of energy, including solar and wind energy and energy from solid municipal waste, has concentrated on hydroelectric power projects, which, in 1992, was of the order of 12.2 per cent. EIB also lends funds to countries outside the European Union: 70 African, Caribbean and Pacific States; 12 Mediterranean countries and 10 Eastern European countries, respectively. In 1993, EIB began lending to Latin American countries. The Bank's policy in regard to lending outside the European Union has been based on detailed economic and technical analysis of alternative solutions and the optimum size and timing of project implementation, together with their environmental impact. It is planned to continue active involvement in lending in these areas.

5. European Bank for Reconstruction and Development

64. The European Bank for Reconstruction and Development assists member countries in the operation of new and renewable sources of energy. It has already approved a loan of ECU 74 million to Slovenia for the refurbishment of hydropower stations. A number of technical cooperation studies are under way to investigate future projects in such areas as hydropower in Latvia, Albania and Kyrgyzstan, mini-hydropower stations in the Danube region, and geothermal heating in the Russian Federation. Many other projects are being discussed with Governments in the region, including, for example, the development of solar cells in Bulgaria, geothermal energy in Slovakia, peat power in the Baltics, wind farms in Ukraine and mini-hydropower plants in Armenia. A number of energy efficiency projects are being implemented or prepared. These include rehabilitation projects for thermal power plants, energy emergency projects in the Baltics, energy efficiency improvement projects in Romania, possible energy conservation projects in Poland and the former Yugoslav Republic of Macedonia, and a project to introduce energy-saving technologies in the Russian district energy system (in cooperation with the ECE Energy Efficiency 2000 Project). The approved projects total ECU 224 million, broken down as follows: Drava River hydropower project, in Slovenia (ECU 74 million); energy projects in Estonia

(ECU 39 million), Latvia (ECU 32 million) and Lithuania (ECU 34 million) and heat supply and conservation, in Poland (ECU 44 million).

III. NON-GOVERNMENTAL ORGANIZATIONS

A. World Energy Council

65. The World Energy Council (WEC) is a multi-energy organization, with member committees from 100 countries. It has been active in energy areas, in particular resource evaluation. Every three years, it organizes a WEC Congress. Initially, the Congress focused on the electricity subsector. But in recent times, coverage has broadened to a wide range of key issues, at the global, regional and national levels, associated with the development and use of all forms of energy. The fifteenth Congress took place at Madrid in 1992, and the sixteenth Congress is scheduled for 1995 in Tokyo. WEC publishes the Survey of Energy Resources on a regular basis. It contains information on fossil fuels, uranium, hydropower, principal renewable energy resources and nuclear energy. The Survey is the most complete and authoritative worldwide survey of all significant energy resources and reserves. The sixteenth edition of the Survey was published in 1992. WEC has recently published two seminar documents - Energy for Tomorrow's World (1993) and Renewable Energy Resources, 1990-2020 (1993). WEC cooperates with a number of other organizations, including the Intergovernmental Panel on Climate Change. Its Journal, issued twice a year, contains articles in the field of energy resources, assessment, development and use. WEC plans a number of studies on relevant issues, including energy resources in developing countries; rational use of energy; environment; and long-term energy perspectives (with IIASA).

B. World Resources Institute

66. The World Resources Institute (WRI) has many activities in the field of energy, among which is a project on renewable energy for sustainable development. The overall goal of the project is to identify and promote policy reforms and initiatives to increase the contribution of cost-effective renewable energy supplies in developing countries. To this end, WRI intends to conduct two complementary studies, focusing on technologies and applications:
(a) rethinking development systems for renewable power generation; and
(b) reforming policies in developing countries for renewable power generation.
In undertaking the above studies, WRI will collaborate with other institutions in the exchange of data and ideas.

C. Worldwatch Institute

67. The Worldwatch Institute has been very active in environment and related matters. Its overall goal is to raise public awareness of environment issues. To this end, the main objective of the Institute is to provide information to policy makers, the media and the public about the complex links between the global economy and the environment. The Institute has acted as an efficient early warning system on global trends, for example, in regard to global warming

and fuelwood shortage. The Institute undertakes research projects on new energy technologies and policies, as well as on other topics. Recent articles and reports of the Institute include cost-effective national energy strategy for the United States, building a bridge to sustainable energy, the bridge to clean energy beyond the petroleum age; designing a solar energy economy and empowering development; and the new energy equation.

68. The main objectives of the recently established World Energy Efficiency Association are to serve as a clearing-house for information on energy programmes, technologies and measures; to disseminate information worldwide and to publicize international cooperation efforts in energy conservation. The main activities of the Association are to assist its members to develop a comprehensive directory of institutions concerned with energy efficiency; to develop in-depth profiles of energy efficiency centres and prepare a guide to databases of energy efficiency technologies; and to help coordinate voluntary support from individual members.

D. International Association for Hydrogen Energy

69. The International Association for Hydrogen Energy promotes the use of hydrogen energy systems as a permanent solution to such problems as global warming, ozone layer depletion, acid rain, oil spills and the like. The Association publishes a monthly international journal on hydrogen energy to inform scientists and decision makers about developments in the field. It is currently surveying the possibilities of establishing, in cooperation with UNIDO, an international centre on hydrogen energy technologies, to be located at Istanbul, for the purpose of providing a system in technology transfer relating to hydrogen energy, as well as initiating hydrogen energy pilot projects in developing countries. The Association plans to hold the tenth World Hydrogen Energy Conference in Florida, United States of America, in June 1994.

E. Agri-Energy Roundtable Inc.

70. The Agri-Energy Roundtable Inc. (AER) was established in 1980 as a result of concern about the impact of rising energy prices on the agro-food chain. The objective of AER is to seek strengthened agricultural trade, development and technology linkages between agriculture and related energy sectors. AER has conducted several international conferences, symposia, workshops and trade missions designed to raise awareness of the interrelationship between agricultural production and energy. The focus has been on the use of agricultural and food residues generated in raw production and processing. Counterpart organizations have been formed in a number of countries. AER encourages the formation of subcommittees in these organizations for the purpose of greater understanding between modern food-processing technologies and energy saving. Aspects of renewable energy technologies in other post-harvest stages, such as those related to transport, drying, storage and preparation, are also explored by these subcommittees.

F. World Liquified Petroleum Gas (LPG) Forum

71. The World Liquified Petroleum Gas (LPG) Forum promotes the continued safe development of the LPG industry by pooling industry resources worldwide. To this end, it organizes international conferences, exhibitions and seminars relevant to the LPG industry and maintains a permanent base to coordinate its activity, involving collection and dissemination of information as well as safety practices.

IV. CONCLUSIONS

72. The current and planned programmes, projects and activities of organizations within and outside the United Nations system in the field of energy are wide-ranging, reflecting, as they do, the mandates of these organizations as well as what they perceive as emerging and important issues and concerns requiring priority or urgent attention. Many organizations highlight the need for policies and strategies that aim at integrating energy, environment and other considerations. Some have active programmes of technical cooperation in this area. Specific activities encompass all aspects of energy development and use.

73. Many organizations are engaged in research and development and related activities, covering a wide variety of energy issues, but without any formal coordinating mechanism or regular and consistent exchange of information, at either the planning or implementation stages. The Committee may wish to consider its future role in this respect. The Secretariat also seeks guidance from the Committee on the structure and outline of similar reports for future sessions.

Notes

1/ Members of the Committee will have access to the full replies as submitted to the Secretariat, if so required.